

# SEQUENCE LISTING

<110> Wood, Keith V.  
Gruber, Monika G.  
Zhuang, Yao

<120> SYNTHETIC NUCLEIC ACID MOLECULE  
COMPOSITIONS AND METHODS OF PREPARATION

<130> 341.005US1

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<170> FastSEQ for Windows Version 4.0

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<212> DNA

<213> Pyrophorus plagiophthalmus

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<211> 1626

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 8

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<220>  
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<220>  
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<210> 12
<211> 1626
<212> DNA
<213> Artificial Sequence

<220>
<223> Sequence of a synthetic luciferase

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<210> 13  
<211> 1626  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Sequence of a synthetic luciferase

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<210> 14  
<211> 1626  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Sequence of a synthetic luciferase

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<210> 15

<211> 1626

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 15

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gtggctccag	tcaacgagag	ctacattccc	gacgaactgt	gtaaagtcat	gggtatctct	360
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cgcaccaact	ttattaagcg	tatcatcatc	ttggacactg	tggagaatat	tcacggttgc	480
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cgtgtcactc	cactcatggc	tgctaagatc	gctgatcgcg	aaactggtaa	ggctttgggc	1140
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ggatattacg	acgaagatga	gcattttttac	gtcgtggatc	gttacaagga	gctgatcaaa	1320
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gaacgtgtga	gccatactaa	gtacttgcgt	ggcggcgtgc	gttttgttga	ctccatccct	1560
cgtaacgtaa	caggcaaaat	tacccgcaag	gagctgttga	aacaattggt	ggagaaggcc	1620
ggcggt						1626

<210> 16  
 <211> 1626  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 16  
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 ttggctcgatg ttggcggcga tgaatctttg agctacaagg agttttttga ggcaaccgtc 180  
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 gctgaaaaca ataccggttt cttcattcca gtcacgccg catggatatat cggtatgata 300  
 gtggctccag tcaacgagag ctacattccc gacgaactgt gtaaagtcac gggatatctc 360  
 aagccacaga ttgtcttcac cactaagaat attctgaaca aagtcctgga agtccaaagc 420  
 cgcaccaact ttattaagcg tatcatcatc ttggacactg tggagaatat tcacggttgc 480  
 gaatctttgc ctaatttcat ctctcgctat tcagacggca acatcgcaaa ctttaaacca 540  
 ctccacttcg accctgtgga acaagttgca gccattctgt gtagcagcgg tactactgga 600  
 ctcccaaagg gagtcatgca gacccatcaa aacatttgcg tgcgtctgat ccatgctctc 660  
 gatccacgct acggcaactca gctgattcct ggtgtcaccg tcttggctca cttgcctttc 720  
 ttccatgctt tcggctttca tattactttg ggttacttta ttggtcggtc ccgctgatt 780  
 atgttcgcc gttttgatca ggaggtttc ttgaaagcca tccaagatta tgaagtccgc 840  
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 tacgacttgt cttcactgcg tgaattgtgt tgcggtgccg ctccactggc taaggaggtc 960  
 gctgaagtgg ccgccaacac cttgaatctt ccagggatc gttgtggctt cggcctcacc 1020  
 gaatctacca gcgctattat tcagtctctc cgcgatgagt ttaagagcgg ctctttgggc 1080  
 cgtgtcactc cactcatggc tgctaagatc gctgatcgcg aaactggtaa ggctttgggc 1140  
 ccgaaccaag tgggcgagct gtgtatcaaa ggccctatgg tgagcaaggg ttatgtcaat 1200  
 aacgttgaag ctaccaagga ggccatcgac gacgacggct ggttgcatc tgggtatttt 1260  
 ggatattacg acgaagatga gcattttttac gtcgtggatc gttacaagga gctgatcaaa 1320  
 tacaagggtg gccaggttgc tccagctgag ttggaggaga ttctgttgaa aaatccatgc 1380  
 attcgcgatg tcgctgtggt cggcattcct gatctggagg ccggcgaaact gccttctgct 1440  
 ttctgtgtca agcagcctgg taaagaaatt accgccaag aagtgtatga ttacctggct 1500  
 gaacgtgtga gccatactaa gtacttgctg ggcggcgtgc gttttgttga ctccatccct 1560  
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 ggcggt 1626

<210> 17  
 <211> 1626  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 17  
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 ttgactgccg gcgaaatgct gtttcgtgct ctccgcaagc actctcattt gcctcaagcc 120  
 ttggctcgatg ttggcggcga tgaatctttg agctacaagg agttttttga ggcaaccgtc 180  
 ttgctggctc agtccctcca caattgtggc tacaagatga acgacgtcgt tagtatctgt 240  
 gctgaaaaca ataccggttt cttcattcca gtcacgccg catggatatat cggtatgata 300  
 gtggctccag tcaacgagag ctacattccc gacgaactgt gtaaagtcac gggatatctc 360  
 aagccacaga ttgtcttcac cactaagaat attctgaaca aagtcctgga agtccaaagc 420  
 cgcaccaact ttattaagcg tatcatcatc ttggacactg tggagaatat tcacggttgc 480  
 gaatctttgc ctaatttcat ctctcgctat tcagacggca acatcgcaaa ctttaaacca 540  
 ctccacttcg accctgtgga acaagttgca gccattctgt gtagcagcgg tactactgga 600  
 ctcccaaagg gagtcatgca gacccatcaa aacatttgcg tgcgtctgat ccatgctctc 660

gatccacgct	acggcactca	gctgattcct	ggtgtcaccg	tcttggtcta	cttgcccttc	720
ttccatgctt	tcggctttca	tattactttg	ggttacttta	tggtcgggtct	ccgcgtgatt	780
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gctgaagtgg	ccgccaaaacg	cttgaatctt	ccagggattc	gttgtggctt	cggcctcacc	1020
gaatctacca	gcgctattat	tcagtctctc	ggggatgagt	ttaagagcgg	ctctttgggc	1080
cgtgtcactc	cactcatggc	tgctaagatc	gctgacgcg	aaactggtaa	ggctttgggc	1140
ccgaaccaag	tgggcgagct	gtgtatcaaa	ggccctatgg	tgagcaagg	ttatgtcaat	1200
aacgttgaag	ctaccaagga	ggccatcgac	gacgacggct	ggttgcattc	tggtgatttt	1260
ggatattacg	acgaagatga	gcattttttac	gtcgtggatc	gttacaagga	gctgatcaaa	1320
tacaagggtg	gccaggttgc	tccagctgag	ttggaggaga	ttctgttgaa	aaatccatgc	1380
attcgcgatg	tcgctgtggt	cggcattcct	gatctggagg	ccggcgaact	gccttctgct	1440
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gaacgtgtga	gccatactaa	gtacttgctg	ggcggcgtgc	gttttggtga	ctccatccct	1560
cgtaacgtaa	caggcaaaaat	taccgcgaag	gagctgttga	aacaattggt	ggagaaggcc	1620
ggcgggt						1626

<210> 18  
 <211> 1626  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 18						
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ttgactgccg	gcgaaatgct	gtttcgtgct	ctccgcaagc	actctcattt	gcctcaagcc	120
ttggtcgatg	tggtcggcga	tgaatctttg	agctacaagg	agttttttga	ggcaaccgct	180
ttgctggctc	agtcctctca	caattgtggc	tacaagatga	acgacgtcgt	tagtatctgt	240
gctgaaaaca	atacccgttt	cttcattcca	gtcatcgccg	catgggtatat	cggtatgac	300
gtggctccag	tcaacgagag	ctacattccc	gacgaactgt	gtaaagtcac	gggtatctct	360
aagccacaga	ttgtcttcac	cactaagaat	attctgaaca	aagtcctgga	agtcctaaagc	420
cgcaccaact	ttattaagcg	tatcatcatc	ttggacactg	tggagaatat	tcacggttgc	480
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aacgttgaag	ctaccaagga	ggccatcgac	gacgacggct	ggttgcattc	tggtgatttt	1260
ggatattacg	acgaagatga	gcattttttac	gtcgtggatc	gttacaagga	gctgatcaaa	1320
tacaagggtg	gccaggttgc	tccagctgag	ttggaggaga	ttctgttgaa	aaatccatgc	1380
attcgcgatg	tcgctgtggt	cggcattcct	gatctggagg	ccggcgaact	gccttctgct	1440
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gaacgtgtga	gccatactaa	gtacttgctg	ggcggcgtgc	gttttggtga	ctccatccct	1560
cgtaacgtaa	caggcaaaaat	taccgcgaag	gagctgttga	aacaattggt	ggtgaaggcc	1620
ggcgggt						1626

<210> 19  
 <211> 933

<212> DNA  
 <213> Renilla reniformis

<400> 19  
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 tgggccagat gtaaacaat gaatgttctt gattcattta ttaattatta tgattcagaa 120  
 aaacatgcag aaaatgctgt tattttttta catggtaacg cggcctcttc ttatttatgg 180  
 cgacatggtg tgccacatat tgagccagta gcgcggtgta ttataccaga tcttattggt 240  
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 cttactgcat ggtttgaact tcttaattta ccaaagaaga tcatttttgt cggccatgat 360  
 tgggggtgctt gtttggcatt tcattatagc tatgagcatc aagataagat caaagcaata 420  
 gttcacgctg aaagtgtagt agatgtgatt gaatcatggg atgaatggcc tgatattgaa 480  
 gaagatattg cgttgatcaa atctgaagaa ggagaaaaaa tggtttttga gaataacttc 540  
 ttcgtggaaa ccatgttgcc atcaaaaatc atgagaaagt tagaaccaga agaatttgca 600  
 gcatatcttg aaccattcaa agagaaaggg gaagtctgct gtccaacatt atcatggcct 660  
 cgtgaaatcc cgtttagtaaa aggtgggtaa cctgacgttg tacaaattgt taggaattat 720  
 aatgcttatac tacgtgcaag tgatgattta caaaaaatgt ttattgaatc ggatccagga 780  
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 tcgttcgttg agcgagttct caaaaatgaa caa 933

<210> 20  
 <211> 933  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 20  
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 tggggccgct gcaagcagat gaacgtgctg gactccttca tcaactacta cgacagcgag 120  
 aagcacgccg agaacgccgt gatcttctctg caccgcaacg ccgcctccag ctacctgtgg 180  
 aggcacgtgg tgccctacat cgagcccggtg gcccgctgca tcatccctga cctgatcggc 240  
 atgggcaagt ccggcaagag cggcaacggc tctaccgcc tgctggacca ctacaagtac 300  
 ctgaccgcct gggtcgagct gctgaacctg cccaagaaga tcatcttcgt gggccacgac 360  
 tgggggagcct gcctggcctt cactactcc tacgagcacc aggacaagat caaggccatc 420  
 gtgcacgccg agagcgtggg ggacgtgatc gagtcctggg acgagtggcc tgacatcgag 480  
 gaggacatcg ccctgatcaa gagcgaggag ggcgagaaga tgggtgctgga gaacaacttc 540  
 ttcgtggaga ccatgctgcc cagcaagatc atgcgcaagc tggagcctga ggagttcgcc 600  
 gcctacctgg agcccttcaa ggagaagggc gaggtgcgcc gccctaccct gtctggccc 660  
 cgcgagatcc ctctggtgaa gggcggaag cccgacgtgg tgcagatcgt gcgcaactac 720  
 aacgcctacc tgcgcgccag cgacgacctg cctaagatgt tcatcgagtc cgacctggc 780  
 ttcttctcca acgcatcgt cgagggagcc aagaagttcc ccaacaccga gttcgtgaag 840  
 gtgaagggcc tgcacttctc ccaggaggac gccctgacg agatgggcaa gtacatcaag 900  
 agcttcgtgg agcgcgctgt gaagaacgag cag 933

<210> 21  
 <211> 933  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 21  
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 tgggctcgct gcaagcaaat gaacgtgctg gactccttca tcaactacta tgattccgag 120

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aagcacgccg agaacgccgt gatttttctg catggtaacg ctgcctccag ctacctgtgg 180
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atgggtaagt ccggcaagag cgggaatggc tcatatcgcc tcttgatca ctacaagtac 300
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cgcgagatcc ctctcggttaa gggaggcaag cccgacgtcg tccagattgt ccgcaactac 720
aacgcctacc ttcgggccag cgacgatctg cctaagatgt tcatcgagtc cgaccctggg 780
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agcttcgtgg agcgcgtgct gaagaacgag cag 933

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<210> 22
<211> 933
<212> DNA
<213> Artificial Sequence

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<220>
<223> Sequence of a synthetic luciferase

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<400> 22
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tgggctcgct gcaagcaaat gaacgtgctg gactccttca tcaactacta tgattccgag 120
aagcacgccg agaacgccgt gatttttctg catggtaacg ctgcctccag ctacctgtgg 180
aggcacgtcg tgcctcacat cgagcccgtg gctagatgca tcatccctga tctgatcgga 240
atgggtaagt ccggcaagag cgggaatggc tcatatcgcc tcttgatca ctacaagtac 300
ctcaccgctt gggttcgagct gctgaacctt ccaaagaaaa tcatctttgt gggccacgac 360
tggggggctt gtctggcctt tctactctcc tacgagcacc aagacaagat caaggccatc 420
gtccatgctg agagtgtcgt ggacgtgac gagtcctggg acgagtggcc tgacatcgag 480
gaggatatcg ccctgatcaa gagcgaagag ggcgagaaaa tgggtgcttga gaataacttc 540
ttcgtcgaga ccatgctccc aagcaagatc atgcggaaac tggagcctga ggagttcgct 600
gcctacctgg agccattcaa ggagaagggc gaggttagac ggcctaccct ctctggcct 660
cgcgagatcc ctctcggttaa gggaggcaag cccgacgtcg tccagattgt ccgcaactac 720
aacgcctacc ttcgggccag cgacgatctg cctaagatgt tcatcgagtc cgaccctggg 780
ttcttttcca acgctattgt cgagggagct aagaagttcc ctaacaccga gttcgtgaag 840
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agcttcgtgg agcgcgtgct gaagaacgag cag 933

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<210> 23
<211> 543
<212> PRT
<213> Pyrophorus plagiophthalmus

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<400> 23
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Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Phe Gly Asp Glu
35           40           45
Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Cys Leu Leu Ala Gln
50           55           60
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys
65           70           75           80
Ala Glu Asn Asn Lys Arg Phe Phe Ile Pro Ile Ile Ala Ala Trp Tyr

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Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala	
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		195					200					205				
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Ala	
	210					215					220					
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225					230					235					240	
Phe	His	Ala	Phe	Gly	Phe	Ser	Ile	Asn	Leu	Gly	Tyr	Phe	Met	Val	Gly	
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	290					295					300					
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305					310					315					320	
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Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Asn	Ile	His	Ser	Leu	Gly	Asp	
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Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala	
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Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val	
	370					375					380					
Gly	Glu	Leu	Cys	Val	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn	
385					390					395					400	
Asn	Val	Glu	Ala	Thr	Lys	Glu	Ala	Ile	Asp	Asp	Asp	Gly	Trp	Leu	His	
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Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val	
			420					425					430			
Asp	Arg	Tyr	Lys	Glu	Leu	Ile	Lys	Tyr	Lys	Gly	Ser	Gln	Val	Ala	Pro	
		435					440		</							

<210> 24  
 <211> 542  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Sequence of clone YG#81-6G01

<400> 24

Met	Met	Lys	Arg	Glu	Lys	Asn	Val	Ile	Tyr	Gly	Pro	Glu	Pro	Leu	His
1				5					10					15	
Pro	Leu	Glu	Asp	Leu	Thr	Ala	Gly	Glu	Met	Leu	Phe	Arg	Ala	Leu	Arg
			20					25					30		
Lys	His	Ser	His	Leu	Pro	Gln	Ala	Leu	Val	Asp	Val	Val	Gly	Asp	Glu
		35					40					45			
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
	50					55					60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115						120					125		
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
		130					135					140			
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145						150				155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170					175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185						190	
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200						205		
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Ala
		210				215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235					240
Phe	His	Ala	Phe	Gly	Phe	Ser	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
			245						250					255	
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
			260					265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275					280					285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
	290					295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val	
305					310					315				320	
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
			325						330					335	
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Asn	Ile	His	Ser	Leu	Arg	Asp
			340					345					350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360					365			
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
	370					375					380				
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn



385                      390                      395                      400  
 Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His  
                                  405                      410                      415  
 Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val  
                                  420                      425                      430  
 Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro  
                                  435                      440                      445  
 Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val  
                                  450                      455                      460  
 Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala  
 465                      470                      475                      480  
 Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr  
                                  485                      490                      495  
 Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly  
                                  500                      505                      510  
 Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr  
                                  515                      520                      525  
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly  
                                  530                      535                      540

<210> 25  
 <211> 542  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 25  
 Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His  
   1                                  5                                  10                                  15  
 Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg  
                                   20                                  25                                  30  
 Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu  
                                   35                                  40                                  45  
 Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln  
                                   50                                  55                                  60  
 Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys  
 65                                  70                                  75                                  80  
 Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr  
                                   85                                  90                                  95  
 Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu  
                                   100                                  105                                  110  
 Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr  
                                   115                                  120                                  125  
 Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe  
                                   130                                  135                                  140  
 Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys  
 145                                  150                                  155                                  160  
 Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala  
                                   165                                  170                                  175  
 Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile  
                                   180                                  185                                  190  
 Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr  
                                   195                                  200                                  205  
 His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Val  
                                   210                                  215                                  220  
 Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe

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225          230          235          240
Phe His Ala Phe Gly Phe Ser Ile Thr Leu Gly Tyr Phe Met Val Gly
          245          250          255
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys
          260          265          270
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val
          275          280          285
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser
          290          295          300
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val
305          310          315          320
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly
          325          330          335
Phe Gly Leu Thr Glu Ser Thr Ser Ala Asn Ile His Ser Leu Arg Asp
          340          345          350
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala
          355          360          365
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val
          370          375          380
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn
385          390          395          400
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His
          405          410          415
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val
          420          425          430
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro
          435          440          445
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val
          450          455          460
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala
465          470          475          480
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr
          485          490          495
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly
          500          505          510
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr
          515          520          525
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly
          530          535          540

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<210> 26  
 <211> 542  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

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<400> 26
Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His
 1          5          10          15
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
          20          25          30
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
          35          40          45
Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln
          50          55          60
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys

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004280" 90254960

65		70		75		80									
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115					120					125			
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
		130				135					140				
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155				160	
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170				175		
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185				190			
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200					205			
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Val
		210				215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235				240	
Phe	His	Ala	Phe	Gly	Phe	Ser	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
			245					250					255		
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
		260						265				270			
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275				280						285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
		290				295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315				320	
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
			325					330					335		
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Asn	Ile	His	Ser	Leu	Arg	Asp
		340						345				350			
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360				365				
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
		370				375					380				
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn
385					390					395				400	
Asn	Val	Glu	Ala	Thr	Lys	Glu	Ala	Ile	Asp	Asp	Asp	Gly	Trp	Leu	His
			405						410				415		
Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val
		420						425				430			
Asp	Arg	Tyr	Lys	Glu	Leu	Ile	Lys	Tyr	Lys	Gly	Ser	Gln	Val	Ala	Pro
		435					440					445			
Ala	Glu	Leu	Glu	Glu	Ile	Leu	Leu	Lys	Asn	Pro	Cys	Ile	Arg	Asp	Val
		450				455					460				
Ala	Val	Val	Gly	Ile	Pro	Asp	Leu	Glu	Ala	Gly	Glu	Leu	Pro	Ser	Ala
465					470					475				480	
Phe	Val	Val	Lys	Gln	Pro	Gly	Lys	Glu	Ile	Thr	Ala	Lys	Glu	Val	Tyr
			485					490				495			
Asp	Tyr	Leu	Ala	Glu	Arg	Val	Ser	His	Thr	Lys	Tyr	Leu	Arg	Gly	Gly
		500						505				510			
Val	Arg	Phe	Val	Asp	Ser	Ile	Pro	Arg	Asn	Val	Thr	Gly	Lys	Ile	Thr
		515					520					525			
Arg	Lys	Glu	Leu	Leu	Lys	Gln	Leu	Leu	Glu	Lys	Ala	Gly	Gly		

530

535

540

&lt;210&gt; 27

&lt;211&gt; 542

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Sequence of a synthetic luciferase

&lt;400&gt; 27

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Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His
 1          5          10          15
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
          20          25          30
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
          35          40          45
Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln
          50          55          60
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys
65          70          75          80
Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr
          85          90          95
Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu
          100          105          110
Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr
          115          120          125
Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe
          130          135          140
Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys
145          150          155          160
Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala
          165          170          175
Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile
          180          185          190
Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr
          195          200          205
His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Val
          210          215          220
Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe
225          230          235          240
Phe His Ala Phe Gly Phe Ser Ile Thr Leu Gly Tyr Phe Met Val Gly
          245          250          255
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys
          260          265          270
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val
          275          280          285
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser
          290          295          300
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val
305          310          315          320
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly
          325          330          335
Phe Gly Leu Thr Glu Ser Thr Ser Ala Asn Ile His Ser Leu Arg Asp
          340          345          350
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala
          355          360          365
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val

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370		375		380
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn				
385		390		395
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His				400
	405		410	
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val				415
	420		425	
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro				430
	435		440	
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val				445
	450		455	
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala				460
	465		470	
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr				475
	485		490	
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly				495
	500		505	
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr				510
	515		520	
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly				525
	530		535	
				540

<210> 28

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 28

Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His				
1	5	10	15	
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg				
	20	25	30	
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu				
	35	40	45	
Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln				
	50	55	60	
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys				
	65	70	75	
Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr				
	85	90	95	
Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu				
	100	105	110	
Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr				
	115	120	125	
Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe				
	130	135	140	
Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys				
	145	150	155	
Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala				
	165	170	175	
Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile				
	180	185	190	
Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr				
	195	200	205	
His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Val				

210	215	220
Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe		
225	230	235
Phe His Ala Phe Gly Phe Ser Ile Thr Leu Gly Tyr Phe Met Val Gly		240
	245	250
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys		255
	260	265
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val		270
	275	280
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser		285
	290	295
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val		300
305	310	315
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly		320
	325	330
Phe Gly Leu Thr Glu Ser Thr Ser Ala Asn Ile His Ser Leu Arg Asp		335
	340	345
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala		350
	355	360
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val		365
	370	375
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn		380
385	390	395
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His		400
	405	410
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val		415
	420	425
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro		430
	435	440
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val		445
	450	455
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala		460
465	470	475
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr		480
	485	490
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly		495
	500	505
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr		510
	515	520
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly		525
	530	535
		540

<210> 29

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 29

Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His		
1	5	10
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg		15
	20	25
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu		30
	35	40
Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln		45

50	55	60
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys		
65	70	75
Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr		80
	85	90
Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu		95
	100	105
Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr		110
	115	120
Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe		125
	130	135
Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys		140
145	150	155
Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala		160
	165	170
Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile		175
	180	185
Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr		190
	195	200
His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Val		205
	210	215
Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe		220
225	230	235
Phe His Ala Phe Gly Phe Ser Ile Thr Leu Gly Tyr Phe Met Val Gly		240
	245	250
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys		255
	260	265
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val		270
	275	280
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser		285
	290	295
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val		300
305	310	315
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly		320
	325	330
Phe Gly Leu Thr Glu Ser Thr Ser Ala Asn Ile His Ser Leu Arg Asp		335
	340	345
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala		350
	355	360
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val		365
	370	375
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn		380
385	390	395
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His		400
	405	410
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val		415
	420	425
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro		430
	435	440
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val		445
	450	455
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala		460
465	470	475
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr		480
	485	490
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly		495
	500	505
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr		510

515                      520                      525  
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly  
 530                      535                      540

<210> 30  
 <211> 542  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

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 1                      5                      10                      15  
 Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg  
 20                      25                      30  
 Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu  
 35                      40                      45  
 Asn Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln  
 50                      55                      60  
 Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys  
 65                      70                      75                      80  
 Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr  
 85                      90                      95  
 Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu  
 100                      105                      110  
 Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr  
 115                      120                      125  
 Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe  
 130                      135                      140  
 Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys  
 145                      150                      155                      160  
 Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala  
 165                      170                      175  
 Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile  
 180                      185                      190  
 Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr  
 195                      200                      205  
 His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Val  
 210                      215                      220  
 Gly Thr Gln Leu Ile Ser Gly Val Thr Val Leu Val Tyr Leu Pro Phe  
 225                      230                      235                      240  
 Phe His Ala Phe Gly Phe Ser Ile Thr Leu Gly Tyr Phe Met Val Gly  
 245                      250                      255  
 Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys  
 260                      265                      270  
 Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val  
 275                      280                      285  
 Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser  
 290                      295                      300  
 Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val  
 305                      310                      315                      320  
 Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly  
 325                      330                      335  
 Phe Gly Leu Thr Glu Ser Thr Ser Ala Asn Ile His Ser Leu Arg Asp  
 340                      345                      350  
 Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala

004280-90754960



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      355              360              365
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val
  370              375              380
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn
  385              390              395              400
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His
      405              410              415
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val
      420              425              430
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro
      435              440              445
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val
      450              455              460
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala
  465              470              475              480
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr
      485              490              495
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly
      500              505              510
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr
      515              520              525
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly
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<210> 31

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 31

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  1              5              10              15
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
      20              25              30
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
      35              40              45
Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln
      50              55              60
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys
  65              70              75              80
Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr
      85              90              95
Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu
      100              105              110
Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr
      115              120              125
Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe
      130              135              140
Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys
  145              150              155              160
Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala
      165              170              175
Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile
      180              185              190
Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr

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195	200	205
His Gln Asn Ile Cys Val Arg	Leu Ile His Ala Leu Asp Pro Arg Val	
210	215	220
Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe		
225	230	235
Phe His Ala Phe Gly Phe Ser Ile Thr Leu Gly Tyr Phe Met Val Gly		
245	250	255
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys		
260	265	270
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val		
275	280	285
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser		
290	295	300
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val		
305	310	315
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly		
325	330	335
Phe Gly Leu Thr Glu Ser Thr Ser Ala Asn Ile His Ser Leu Arg Asp		
340	345	350
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala		
355	360	365
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val		
370	375	380
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn		
385	390	395
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His		
405	410	415
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val		
420	425	430
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro		
435	440	445
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val		
450	455	460
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala		
465	470	475
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr		
485	490	495
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly		
500	505	510
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr		
515	520	525
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly		
530	535	540

<210> 32

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 32

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Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg		
20	25	30
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu		

		35					40					45				
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln	
	50					55					60					
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys	
65					70					75					80	
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr	
				85					90					95		
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu	
			100					105				110				
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr	
		115					120				125					
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe	
	130					135					140					
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys	
145					150					155					160	
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala	
				165					170					175		
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile	
			180					185				190				
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr	
		195					200					205				
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr	
	210					215					220					
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe	
225					230					235					240	
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly	
				245					250					255		
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys	
			260					265					270			
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val	
		275					280					285				
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser	
	290					295					300					
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val	
305					310					315					320	
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly	
				325					330					335		
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Ser	Leu	Arg	Asp	
			340					345					350			
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala	
		355					360					365				
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val	
	370					375					380					
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn	
385					390					395					4	



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Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala
      355      360      365
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val
      370      375      380
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn
385      390      395      400
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His
      405      410      415
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val
      420      425      430
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro
      435      440      445
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val
450      455      460
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala
465      470      475      480
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr
      485      490      495
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly
      500      505      510
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr
      515      520      525
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly
530      535      540

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<220>
<223> Sequence of a synthetic luciferase

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1      5      10      15
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
20      25      30
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
35      40      45
Ser Leu Ser Tyr Lys Glu Phe Glu Ala Thr Val Leu Leu Ala Gln
50      55      60
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys
65      70      75      80
Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr
85      90      95
Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu
100      105      110
Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr
115      120      125
Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe
130      135      140
Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys
145      150      155      160
Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala
165      170      175
Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile

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				180				185					190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200					205			
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr
	210					215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235					240
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
				245					250					255	
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
			260					265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275					280					285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
	290					295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315					320
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
			325						330					335	
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Ser	Leu	Arg	Asp
			340					345					350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360					365			
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
	370					375					380				
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn
385					390					395					400
Asn	Val	Glu	Ala	Thr	Lys	Glu	Ala	Ile	Asp	Asp	Asp	Gly	Trp	Leu	His
			405						410					415	
Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val
			420					425					430		
Asp	Arg	Tyr	Lys	Glu	Leu	Ile	Lys	Tyr	Lys	Gly	Ser	Gln	Val	Ala	Pro
		435					440					445			
Ala	Glu	Leu	Glu	Glu	Ile	Leu	Leu	Lys	Asn	Pro	Cys	Ile	Arg	Asp	Val
		450				455					460				
Ala	Val	Val	Gly	Ile	Pro	Asp	Leu	Glu	Ala	Gly	Glu	Leu	Pro	Ser	Ala
465					470					475					480
Phe	Val	Val	Lys	Gln	Pro	Gly	Lys	Glu	Ile	Thr	Ala	Lys	Glu	Val	Tyr
			485						490					495	
Asp	Tyr	Leu	Ala	Glu	Arg	Val	Ser	His	Thr	Lys	Tyr	Leu	Arg	Gly	Gly
		500						505				510			
Val	Arg	Phe	Val	Asp	Ser	Ile	Pro	Arg	Asn	Val	Thr	Gly	Lys	Ile	Thr
		515					520					525			
Arg	Lys	Glu	Leu	Leu	Lys	Gln	Leu	Leu	Glu	Lys	Ala	Gly	Gly		
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<210> 36

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<211> 44  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

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44

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<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 37  
tataatgtga ggaattgcga gcggataaca atttcacaca

40

<210> 38  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
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atgggatggtt acctagacca atatgaaata tttggtaa

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<210> 39  
<211> 40  
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<400> 39  
aaatgcttaa tgaatttcaa aaaaaaaaaa aaaggaattc

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<210> 42  
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<400> 42  
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<210> 43  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 43  
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<210> 44  
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 <223> An oligonucleotide

<400> 44  
 gtatcgataa gcttgatata gaattccttt tttttttttt 40

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 <211> 40  
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<210> 46  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

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<400> 46  
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 <210> 47  
 <211> 40  
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 <210> 48  
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 <220>  
 <223> An oligonucleotide  
  
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 <210> 49  
 <211> 53  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> An oligonucleotide  
  
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 <210> 50  
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 <212> DNA  
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 <220>  
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09645706-082400

<210> 52  
 <211> 40  
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 <213> Artificial Sequence

<220>  
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<400> 52  
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<210> 53  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
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<400> 53  
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<210> 54  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 54  
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<210> 55  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 55  
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<210> 56  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 56  
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<210> 57  
 <211> 40  
 <212> DNA

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<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 57  
tcctgtaatc gctgcttggt acatcgcat gattgtcgcc 40

<210> 58  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 58  
cctgtgaatg aatcttacat cccagatgag ctgtgtaagg 40

<210> 59  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 59  
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<210> 60  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 60  
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<210> 61  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 61  
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<210> 62  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>

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<223> An oligonucleotide

<400> 62

acatccacgg ctgtgagagc ctccctaact tcattctctcg

40

<210> 63

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 63

ttacagcgat ggtaatatcg ctaatttcaa gcccttgcat

40

<210> 64

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

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<210> 65

<211> 40

<212> DNA

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ccggcaccac tggtttgcct aaaggtgtca tgcagactca

40

<210> 66

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 66

ccagaatatc tgtgtgcggt tgatccacgc tctcgaccct

40

<210> 67

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 67

cgtgtgggta ctcaattgat ccctggcgtg actgtgctgg 40

<210> 68  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 68  
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<210> 69  
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<400> 178

gttacgaggg atggagtcaa caaaacgcac gccgccacgc 40

<210> 179  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 179  
 aagtacttag tatggctcac acgttcagcc aggtaatcat 40

<210> 180  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 180  
 acatttcttt ggcggtaatt tctttaccag gctgcttgac 40

<210> 181  
 <211> 40  
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 <213> Artificial Sequence

<220>  
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<400> 181  
 aacgaaagca gaaggcagtt cgccggcctc cagatcagga 40

<210> 182  
 <211> 40  
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 <223> An oligonucleotide

<400> 182  
 atgccgacca cagcgacatc gcgaatgcat ggatttttca 40

<210> 183  
 <211> 40  
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 <213> Artificial Sequence

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<400> 183  
 acagaatctc ctccaactca gctggagcaa cctggctacc 40

<210> 184

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<211> 40  
<212> DNA  
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<220>  
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<400> 184  
cttgattttg atcagctcct tgtaacgatc cacgacgtaa 40

<210> 185  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 185  
aaatgctcat cttcgtcgta atatccaaaa tcaccagaat 40

<210> 186  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 186  
gcaaccagcc gtcgtcgtcg atggcctcct tggtagcttc 40

<210> 187  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 187  
gacgttattg acataaccct tgctcaccat agggcctttg 40

<210> 188  
<211> 40  
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<220>  
<223> An oligonucleotide

<400> 188  
atacacagct cgcccacttg gttagggccc aaagccttac 40

<210> 189  
<211> 40  
<212> DNA  
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<220>  
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<400> 189  
 cagtttcgcg atcagcgatc ttagcagcca tgagtggagt 40

<210> 190  
 <211> 40  
 <212> DNA  
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<220>  
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<400> 190  
 gacacggccc aaagagccgc tcttaaactc atcgcggaga 40

<210> 191  
 <211> 37  
 <212> DNA  
 <213> Artificial Sequence

<220>  
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<400> 191  
 gactgaataa tagcgctggt agattcgggtg aggccga 37

<210> 192  
 <211> 43  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 192  
 agccacaacg aatccctgga agattcaagc gtttggcggc cac 43

<210> 193  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 193  
 ttcagcgacc tccttagcca gtggagcggc accgcaacac 40

<210> 194  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 194  
aattcacgca gtgaagacaa gtcgtacttg tccacgagtg 40

<210> 195  
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<212> DNA  
<213> Artificial Sequence

<220>  
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<400> 195  
ggctcctaga caaaaacagg atcacgctag gcacgttgat 40

<210> 196  
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<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 196  
gacactgcgg acttcataat cttggatggc tttcaagaaa 40

<210> 197  
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<212> DNA  
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<220>  
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<400> 197  
gcctcctgat caaaacggcg gaacataatc acgcggagac 40

<210> 198  
<211> 40  
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<220>  
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<400> 198  
cgaccataaa gtaaccctaaa gtaatatgaa agccgaaagc 40

<210> 199  
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<220>  
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<400> 199  
atggaagaaa ggcaagtaga ccaagacggt gacaccagga 40

<210> 200  
<211> 40  
<212> DNA  
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<220>  
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<400> 200  
atcagctgag tgccgtagcg tggatcgaga gcatggatca

40

<210> 201  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
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<400> 201  
gacgcacgca aatgttttga tgggtctgca tgactccctt

40

<210> 202  
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<212> DNA  
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<220>  
<223> An oligonucleotide

<400> 202  
tgaggagtcca gtagtaccgc tgctacacag aatggctgca

40

<210> 203  
<211> 40  
<212> DNA  
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<220>  
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<400> 203  
acttggtcca cagggtcgaa gtggagtggg ttaaagtttg

40

<210> 204  
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<220>  
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<400> 204  
cgatgttgcc gtctgaatag cgagagatga aattaggcaa

40

<210> 205  
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<213> Artificial Sequence

<220>  
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<400> 205  
agattcgcaa ccgtgaatat tctccacagt gtccaagatg 40

<210> 206  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
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<400> 206  
atgatacgct taataaaagt ggtgcggctt tggacttcca 40

<210> 207  
<211> 40  
<212> DNA  
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<220>  
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<400> 207  
ggactttggt cagaatattc ttagtggtga agacaatctg 40

<210> 208  
<211> 40  
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<220>  
<223> An oligonucleotide

<400> 208  
tggcttagag atacccatga ctttacacag ttcgtcggga 40

<210> 209  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
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<400> 209  
atgtagctct cggtgactgg agccacgatc ataccgatat 40

<210> 210  
<211> 40  
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<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 210  
accatgcggc gatgactgga atgaagaaac gggatttggt 40

<210> 211  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 211  
ttcagcacag atactaacga cgtcgttcat cttgtagcca 40

<210> 212  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 212  
caattgtgga gggactgagc cagcaagacg gttgcctcaa 40

<210> 213  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 213  
aaaactcctt gtagctcaaa gattcatcgc cgaccacatc 40

<210> 214  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 214  
gaccaaggct tgaggcaaat gagagtgctt gcggagagca 40

<210> 215  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 215



cgaaacagca tttcgccggc agtcaaattcc tccaaaggat

40

<210> 216

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 216

ggagaggctc agggccatag atgacatttt tctcacgctt

40

<210> 217

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 217

catcatggga tcctgtttcc tgtgtgaaat tggtatccgc

40

<210> 218

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 218

Met	Met	Lys	Arg	Glu	Lys	Asn	Val	Ile	Tyr	Gly	Pro	Glu	Pro	Leu	His
1				5					10					15	
Pro	Leu	Glu	Asp	Leu	Thr	Ala	Gly	Glu	Met	Leu	Phe	Arg	Ala	Leu	Arg
			20					25					30		
Lys	His	Ser	His	Leu	Pro	Gln	Ala	Leu	Val	Asp	Val	Val	Gly	Asp	Glu
			35				40					45			
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
			50				55				60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
			115					120					125		
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
			130				135					140			
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170					175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185					190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr

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195	200	205
His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Tyr		
210	215	220
Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe		
225	230	235
Phe His Ala Phe Gly Phe His Ile Thr Leu Gly Tyr Phe Met Val Gly		
245	250	255
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys		
260	265	270
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val		
275	280	285
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser		
290	295	300
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val		
305	310	315
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly		
325	330	335
Phe Gly Leu Thr Glu Ser Thr Ser Ala Ile Ile Gln Ser Leu Arg Asp		
340	345	350
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala		
355	360	365
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val		
370	375	380
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn		
385	390	395
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His		
405	410	415
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val		
420	425	430
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro		
435	440	445
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val		
450	455	460
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala		
465	470	475
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr		
485	490	495
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly		
500	505	510
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr		
515	520	525
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly		
530	535	540

<210> 219

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 219

Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His		
1	5	10
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg		
20	25	30
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu		

	35						40					45				
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln	
	50					55					60					
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys	
65					70					75					80	
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr	
				85					90					95		
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu	
			100					105					110			
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr	
		115					120					125				
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe	
	130					135					140					
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys	
145					150					155					160	
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala	
				165					170					175		
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile	
			180					185						190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr	
		195					200					205				
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr	
	210					215					220					
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe	
225					230					235					240	
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly	
				245					250					255		
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys	
			260					265						270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val	
		275					280					285				
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser	
	290					295					300					
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val	
305					310					315					320	
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly	
				325					330					335		
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Ser	Leu	Arg	Asp	
			340					345						350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala	
		355					360					365				
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val	
	370					375					380					
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn	
385					390					395					400	

	500		505		510
Val Arg Phe	Val Asp Ser Ile	Pro Arg Asn Val Thr	Gly Lys Ile Thr		
	515	520	525		
Arg Lys Glu	Leu Leu Lys Gln	Leu Leu Glu Lys	Ala Gly Gly		
	530	535	540		

<210> 220  
 <211> 542  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 220

Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His	
1 5 10 15	
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg	
20 25 30	
Lys His Ser Tyr Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu	
35 40 45	
Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln	
50 55 60	
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys	
65 70 75 80	
Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr	
85 90 95	
Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu	
100 105 110	
Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr	
115 120 125	
Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe	
130 135 140	
Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys	
145 150 155 160	
Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala	
165 170 175	
Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile	
180 185 190	
Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr	
195 200 205	
His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Tyr	
210 215 220	
Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe	
225 230 235 240	
Phe His Ala Phe Gly Phe His Ile Thr Leu Gly Tyr Phe Met Val Gly	
245 250 255	
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys	
260 265 270	
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val	
275 280 285	
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser	
290 295 300	
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val	
305 310 315 320	
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly	
325 330 335	
Phe Gly Leu Thr Glu Ser Thr Ser Ala Ile Ile Gln Ser Leu Arg Asp	



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180	185	190
Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr		
195	200	205
His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Tyr		
210	215	220
Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe		
225	230	235
Phe His Ala Phe Gly Phe His Ile Thr Leu Gly Tyr Phe Met Val Gly		
245	250	255
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys		
260	265	270
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val		
275	280	285
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser		
290	295	300
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val		
305	310	315
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly		
325	330	335
Phe Gly Leu Thr Glu Ser Thr Ser Ala Ile Ile Gln Ser Leu Arg Asp		
340	345	350
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala		
355	360	365
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val		
370	375	380
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn		
385	390	395
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His		
405	410	415
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val		
420	425	430
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro		
435	440	445
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val		
450	455	460
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala		
465	470	475
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr		
485	490	495
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly		
500	505	510
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr		
515	520	525
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly		
530	535	540

<210> 222

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 222

Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His
1 5 10 15
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg

				20						25					30
Lys	His	Ser	His	Leu	Pro	Gln	Ala	Leu	Val	Asp	Val	Val	Gly	Asp	Glu
		35					40					45			
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
	50					55					60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115					120					125			
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
	130					135					140				
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165				170						175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185					190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200					205			
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr
	210					215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235					240
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
				245				250						255	
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
			260					265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275					280					285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
	290					295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315					320
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
				325				330						335	
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Ser	Leu	Gly	Asp
			340					345					350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360					365			
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
	370					375									

485 490 495  
 Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly  
 500 505 510  
 Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr  
 515 520 525  
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly  
 530 535 540

<210> 223  
 <211> 542  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 223  
 Met Ile Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His  
 1 5 10 15  
 Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg  
 20 25 30  
 Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu  
 35 40 45  
 Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln  
 50 55 60  
 Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys  
 65 70 75 80  
 Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr  
 85 90 95  
 Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu  
 100 105 110  
 Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr  
 115 120 125  
 Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe  
 130 135 140  
 Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys  
 145 150 155 160  
 Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala  
 165 170 175  
 Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile  
 180 185 190  
 Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr  
 195 200 205  
 His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Tyr  
 210 215 220  
 Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe  
 225 230 235 240  
 Phe His Ala Phe Gly Phe His Ile Thr Leu Gly Tyr Phe Met Val Gly  
 245 250 255  
 Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys  
 260 265 270  
 Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val  
 275 280 285  
 Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser  
 290 295 300  
 Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val  
 305 310 315 320  
 Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly

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325 330 335  
 Phe Gly Leu Thr Glu Ser Thr Ser Ala Ile Ile Gln Thr Leu Gly Asp  
 340 345 350  
 Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala  
 355 360 365  
 Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val  
 370 375 380  
 Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn  
 385 390 395 400  
 Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His  
 405 410 415  
 Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val  
 420 425 430  
 Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro  
 435 440 445  
 Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val  
 450 455 460  
 Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala  
 465 470 475 480  
 Phe Val Val Lys Gln Pro Gly Thr Glu Ile Thr Ala Lys Glu Val Tyr  
 485 490 495  
 Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly  
 500 505 510  
 Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr  
 515 520 525  
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Val Lys Ala Gly Gly  
 530 535 540

<210> 224

<211> 311

<212> PRT

<213> Renilla reniformis

<400> 224

Met Thr Ser Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr  
 1 5 10 15  
 Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser  
 20 25 30  
 Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile  
 35 40 45  
 Phe Leu His Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val  
 50 55 60  
 Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly  
 65 70 75 80  
 Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp  
 85 90 95  
 His Tyr Lys Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys  
 100 105 110  
 Lys Ile Ile Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His  
 115 120 125  
 Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu  
 130 135 140  
 Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu  
 145 150 155 160  
 Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu  
 165 170 175  
 Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg  
 180 185 190

Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu  
 195 200 205  
 Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro  
 210 215 220  
 Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr  
 225 230 235 240  
 Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu  
 245 250 255  
 Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys  
 260 265 270  
 Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln  
 275 280 285  
 Glu Asp Ala Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe Val Glu  
 290 295 300  
 Arg Val Leu Lys Asn Glu Gln  
 305 310

<210> 225

<211> 311

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 225

Met Ala Ser Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr  
 1 5 10 15  
 Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser  
 20 25 30  
 Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile  
 35 40 45  
 Phe Leu His Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val  
 50 55 60  
 Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly  
 65 70 75 80  
 Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp  
 85 90 95  
 His Tyr Lys Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys  
 100 105 110  
 Lys Ile Ile Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His  
 115 120 125  
 Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu  
 130 135 140  
 Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu  
 145 150 155 160  
 Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu  
 165 170 175  
 Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg  
 180 185 190  
 Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu  
 195 200 205  
 Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro  
 210 215 220  
 Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr  
 225 230 235 240  
 Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu  
 245 250 255

Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys  
                   260                  265                  270  
 Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln  
                   275                  280                  285  
 Glu Asp Ala Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe Val Glu  
                   290                  295                  300  
 Arg Val Leu Lys Asn Glu Gln  
 305                  310

<210> 226

<211> 311

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 226

Met Ala Ser Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr  
   1                  5                  10                  15  
 Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser  
                   20                  25                  30  
 Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile  
                   35                  40                  45  
 Phe Leu His Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val  
                   50                  55                  60  
 Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly  
                   65                  70                  75                  80  
 Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp  
                   85                  90                  95  
 His Tyr Lys Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys  
                   100                  105                  110  
 Lys Ile Ile Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His  
                   115                  120                  125  
 Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu  
                   130                  135                  140  
 Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu  
                   145                  150                  155                  160  
 Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu  
                   165                  170                  175  
 Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg  
                   180                  185                  190  
 Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu  
                   195                  200                  205  
 Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro  
                   210                  215                  220  
 Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr  
                   225                  230                  235                  240  
 Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu  
                   245                  250                  255  
 Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys  
                   260                  265                  270  
 Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln  
                   275                  280                  285  
 Glu Asp Ala Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe Val Glu  
                   290                  295                  300  
 Arg Val Leu Lys Asn Glu Gln  
 305                  310

<210> 227  
 <211> 311  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 227  
 Met Ala Ser Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr  
 1 5 10 15  
 Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser  
 20 25 30  
 Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile  
 35 40 45  
 Phe Leu His Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val  
 50 55 60  
 Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly  
 65 70 75 80  
 Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp  
 85 90 95  
 His Tyr Lys Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys  
 100 105 110  
 Lys Ile Ile Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His  
 115 120 125  
 Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu  
 130 135 140  
 Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu  
 145 150 155 160  
 Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu  
 165 170 175  
 Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg  
 180 185 190  
 Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu  
 195 200 205  
 Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro  
 210 215 220  
 Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr  
 225 230 235 240  
 Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu  
 245 250 255  
 Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys  
 260 265 270  
 Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln  
 275 280 285  
 Glu Asp Ala Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe Val Glu  
 290 295 300  
 Arg Val Leu Lys Asn Glu Gln  
 305 310

<210> 228  
 <211> 14  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> A consensus sequence

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<221> misc\_feature  
 <222> (1)...(14)  
 <223> n = A,T,C or G

<400> 228  
 yggmnnnnng ccaa 14

<210> 229  
 <211> 38  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> A primer

<400> 229  
 gtactgagac gacgccagcc caagcttagg cctgagtg 38

<210> 230  
 <211> 38  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> A primer

<400> 230  
 ggcatgagcg tgaactgact gaactagcgg ccgccgag 38

<210> 231  
 <211> 24  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> A primer

<400> 231  
 ggatcccatg gtgaagcgtg agaa 24

<210> 232  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> A primer

<400> 232  
 ggatcccatg gtgaaacgcg a 21

<210> 233  
 <211> 31  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> A primer

<400> 233  
ctagcttttt tttctagata atcatgaaga c 31

<210> 234  
<211> 54  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> A primer

<400> 234  
caaaaagctt ggcattccgg tactgttggt aaagccacca tggatgaagcg agag 54

<210> 235  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> A primer

<400> 235  
caattgttgt tgttaacttg tttatt 26

<210> 236  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> A primer

<400> 236  
aaccatggct tccaaggtgt acgaccccgga gcaacgcaaa 40

<210> 237  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> A primer

<400> 237  
gctctagaat tactgctcgt tcttcagcac gcgctccacg 40

<210> 238  
<211> 31  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> A primer

<400> 238  
cgctagccat ggcttcgaaa gtttatgatc c 31

<210> 239  
 <211> 25  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> A primer

<400> 239  
 ggccagtaac tctagaatta ttgtt

25

<210> 240  
 <211> 5  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 240  
 tataa

5

<210> 241  
 <211> 6  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 241  
 stratg

6

<210> 242  
 <211> 9  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<221> misc\_feature  
 <222> (1)...(9)  
 <223> n = A,T,C or G

<400> 242  
 mttncnnma

9

<210> 243  
 <211> 5  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 243  
 tratg

5

<210> 244  
 <211> 7  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> A consensus sequence

<400> 244  
 tgastma

7

<210> 245  
 <211> 14  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> A consensus sequence

<221> misc\_feature  
 <222> (1)...(14)  
 <223> n = A,T,C or G

<400> 245  
 yggmnnnnng ccaa

14

<210> 246  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 246  
 aaccatggct tccaaggtgt acgacccga gcaacgcaaa

40

<210> 247  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 247  
 cgcgatgatca ctgggcctca gtggtgggct cgctgcaagc

40

<210> 248  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 248  
 aaatgaacgt gctggactcc ttcataact actatgattc

40



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<210> 249  
<211> 50  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 249  
cgagaagcac gccgagaacg ccgtgatttt tctgcatggt aacgctgcct 50

<210> 250  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 250  
ccagctacct gtggaggcac gtcgtgcctc acatcgagcc 40

<210> 251  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 251  
cgtggctaga tgcacatcc ctgatctgat cggaatgggt 40

<210> 252  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 252  
aagtccggca agagcgggaa tggctcatat cgcctcctgg 40

<210> 253  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 253  
atcactacaa gtacctcacc gcttggttcg agctgctgaa 40

<210> 254  
<211> 40  
<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 254

ccttccaaag aaaatcatct ttgtgggcca cgactggggg

40

<210> 255

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 255

gcttgtctgg cctttcacta ctcctacgag caccaagaca

40

<210> 256

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 256

agatcaaggc catcgccat gctgagagtg tcgtggacgt

40

<210> 257

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 257

gatcgagtcc tgggacgagt ggcctgacat cgaggaggat atcgc

45

<210> 258

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 258

cctgatcaag agcgaagagg gcgagaaaat ggtgcttgag

40

<210> 259

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 259

aataacttct tcgtcgagac catgctccca agcaagatca

40

<210> 260

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 260

tgcggaact ggagcctgag gagttcgctg cctacctgga gccat

45

<210> 261

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 261

tcaaggagaa gggcgagggtt agacggccta ccctctcctg

40

<210> 262

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 262

gcctcgcgag atccctctcg ttaagggagg caagcccgac

40

<210> 263

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 263

gtcgtccaga ttgtccgcaa ctacaacgcc taccttcggg

40

<210> 264

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 264

ccagcgacga tctgcctaag atgttcacgc agtccgaccc 40

<210> 265  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 265  
 tgggttcttt tccaacgcta ttgtcgaggg agctaagaag 40

<210> 266  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 266  
 ttccctaaca ccgagttcgt gaaggagaag ggcctccact 40

<210> 267  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 267  
 tcagccagga ggacgctcca gatgaaatgg gtaagtacat 40

<210> 268  
 <211> 49  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 268  
 caagagcttc gtggagcgcg tgctgaagaa cgagcagtaa ttctagagc 49

<210> 269  
 <211> 29  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 269  
 gctctagaat tactgctcgt tcttcagca 29

<210> 270

<211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 270  
 cgcgctccac gaagctcttg atgtacttac ccatttcac

40

<210> 271  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 271  
 tggagcgcc tcctggctga agtggaggcc cttcaccttc

40

<210> 272  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 272  
 acgaactcgg tgtagggaa cttcttagct ccctcgacaa

40

<210> 273  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 273  
 tagcggttga aaagaacca gggtcggact cgatgaacat

40

<210> 274  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> An oligonucleotide

<400> 274  
 cttaggcaga tcgtcgctgg cccgaaggta ggcgttgtag

40

<210> 275  
 <211> 40  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 275

ttgcggacaa tctggacgac gtcgggcttg cctcccttaa

40

<210> 276

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 276

cgagagggat ctcgagaggc caggagaggg taggccgtct

40

<210> 277

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 277

aacctcgccc ttctccttga atggctccag gtaggcagcg

40

<210> 278

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 278

aactcctcag gctccagttt ccgcatgac ttgcttggga gcatg

45

<210> 279

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 279

gtctcgacga agaagttatt ctcaagcacc attttctcgc

40

<210> 280

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 280  
cctcttcgct cttgatcagg gcgatatacct cctcgatgtc 40

<210> 281  
<211> 43  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 281  
aggccactcg tcccaggact cgatcacgtc cacgacactc tca 43

<210> 282  
<211> 42  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 282  
gcatggacga tggccttgat cttgtcttgg tgctcgtagg ag 42

<210> 283  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 283  
tagtgaaagg ccagacaagc cccccagtcg tggcccacaa 40

<210> 284  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 284  
agatgatttt ctttgaagg ttcagcagct cgaaccaagc 40

<210> 285  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 285  
ggtgaggtac ttgtagtgat ccaggaggcg atatgagcca 40

<210> 286  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 286  
ttcccgtctt tgccggactt acccattccg atcagatcag

40

<210> 287  
<211> 45  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 287  
ggatgatgca tctagccacg ggctcgatgt gaggcacgac gtgcc

45

<210> 288  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 288  
tccacaggta gctggaggca gcgttaccat gcagaaaaat

40

<210> 289  
<211> 45  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 289  
cacggcgctt tcggcgtgct tctcggaatc atagtagttg atgaa

45

<210> 290  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> An oligonucleotide

<400> 290  
ggagtccagc acgttcattt gcttgacgag agcccaccac

40

<210> 291  
<211> 40  
<212> DNA



<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 291

tgaggccag tgatcatgcg tttgcgttgc tcggggtcgt

40

<210> 292

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 292

acaccttgga agccatggtt

20

<210> 293

<211> 10

<212> DNA

<213> Artificial Sequence

<220>

<223> A Kozak sequence

<400> 293

aaccatggct

10

<210> 294

<211> 12

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 294

taattctaga gc

12

<210> 295

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> A primer

<400> 295

gcgtagccat ggtaaagcgt gagaaaaatg tc

32

<210> 296

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> A primer

<400> 296

ccgactctag attactaacc gccggccttc acc

33

<210> 297

<211> 1626

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 297

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ctcaccgctg	gtgagatgct	cttccgagca	ctgcgtaaac	atagtcacct	ccctcaagca	120
ctcgtggacg	tcgtgggaga	cgagagcctc	tcctacaaag	aatttttcga	agctactgtg	180
ctggtggccc	aaagcctcca	taattgtggg	tacaaaatga	acgatgtggg	gagcatttgt	240
gctgagaata	acactcgctt	ctttattcct	gtaatcgctg	cttgggtacat	cggcattgatt	300
gtcgccccctg	tgaatgaatc	ttacatccca	gatgagctgt	gtaagggttat	gggtattagc	360
aaacctcaaa	tcgtctttac	tacaaaaaac	atcttgaata	aggtcttggg	agtccagtct	420
cgtactaact	tcatacaacg	catcattatt	ctggataccg	tcgaaaacat	ccacggctgt	480
gagagcctcc	ctaacttcat	ctctcgttac	agcgatggta	atatcgctaa	tttcaagccc	540
ttgcattttg	atccagtcga	gcaagtggcc	gctattttgt	gctcctccgg	caccactggg	600
ttgcctaaag	gtgtcatgca	gactcaccag	aatatctgtg	tgcgtttgat	ccacgctctc	660
gaccctcgctg	tgggtactca	attgatccct	ggcgtgactg	tgctgggtga	tctgcctttc	720
tttcacgcct	ttggtttctc	tattaccctg	ggctatttca	tggtcggcct	gcgtgtcatc	780
atgtttcgctc	gcttcgacca	agaagccttc	ttgaaggcta	ttcaagacta	cgagggtgcgt	840
tcggtgatca	acgtcccctc	agtcattttg	ttcctgagca	aatctccttt	gggttgacaag	900
tatgatctga	gcagcttgcg	tgagctgtgc	tgtggcgctg	ctcctttggc	caaagaagtg	960
gccgaggtcg	ctgctaagcg	tctgaacctc	cctgggtatcc	gctgcgggtt	tggtttgact	1020
gagagcactt	ctgctaacat	ccatagcttg	cgagacgagt	ttaagtctgg	tagcctgggt	1080
cgcgtagctc	ctcttatggc	tgcaaagatc	gccgaccgtg	agaccggcaa	agcactgggc	1140
ccaaatcaag	tcggtgaatt	gtgtattaag	ggccctatgg	tctctaaagg	ctacgtgaac	1200
aatgtggagg	ccactaaaga	agccattgat	gatgatggct	ggctccatag	cggcgacttc	1260
ggttactatg	atgaggacga	acacttctat	gtggctgatc	gctacaaaga	attgattaag	1320
tacaaaggct	ctcaagtcgc	accagccgaa	ctggaagaaa	ttttgctgaa	gaacccttgt	1380
atccgcgacg	tggccgctgt	gggtatccca	gacttggaag	ctggcgagtt	gcctagcgcc	1440
tttgtgggtg	aacaacccgg	caaggagatc	actgctaagg	aggtctacga	ctatttggcc	1500
gagcgcgtgt	ctcacaccaa	atatctgcgt	ggcgccgctc	gcttcgtcga	ttctattcca	1560
cgcaacgtta	ccggtaagat	cactcgtaaa	gagttgctga	agcaactcct	cgaaaaagct	1620
ggcggc						1626

<210> 298

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 298

Met	Val	Lys	Arg	Glu	Lys	Asn	Val	Ile	Tyr	Gly	Pro	Glu	Pro	Leu	His
1					5				10					15	
Pro	Leu	Glu	Asp	Leu	Thr	Ala	Gly	Glu	Met	Leu	Phe	Arg	Ala	Leu	Arg
			20					25					30		
Lys	His	Ser	His	Leu	Pro	Gln	Ala	Leu	Val	Asp	Val	Val	Gly	Asp	Glu
	35						40					45			

004280" 90254960

Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
50						55					60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115					120					125			
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
	130					135					140				
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170					175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185					190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200					205			
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Val
	210					215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235					240
Phe	His	Ala	Phe	Gly	Phe	Ser	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
				245					250					255	
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
			260					265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275					280					285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
	290					295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315					320
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
				325					330					335	
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Asn	Ile	His	Ser	Leu	Arg	Asp
			340					345					350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360					365			
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
	370					375					380				
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn
385					390					395					400
Asn	Val	Glu	Ala	Thr	Lys	Glu	Ala	Ile	Asp	Asp	Asp	Gly	Trp	Leu	His
				405					410					415	
Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val
				420				425					430		
Asp	Arg	Tyr	Lys	Glu	Leu	Ile	Lys	Tyr	Lys	Gly	Ser	Gln	Val	Ala	Pro
		435					440					445			
Ala	Glu	Leu	Glu	Glu	Ile	Leu	Leu	Lys	Asn	Pro	Cys	Ile	Arg	Asp	Val
	450					455					460				
Ala	Val	Val	Gly	Ile	Pro	Asp	Leu	Glu	Ala	Gly	Glu	Leu	Pro	Ser	Ala
465					470					475					480
Phe	Val	Val	Lys	Gln	Pro	Gly	Lys	Glu	Ile	Thr	Ala	Lys	Glu	Val	Tyr
				485				490						495	
Asp	Tyr	Leu	Ala	Glu	Arg	Val	Ser	His	Thr	Lys	Tyr	Leu	Arg	Gly	Gly
		500						505					510		

Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr  
 515 520 525  
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly  
 530 535 540

<210> 299  
 <211> 1626  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 299  
 atggtgaagc gtgagaaaaa tgtcatctat ggccctgagc ctctccatcc tttggaggat 60  
 ttgactgccg gcgaaatgct gtttcgtgct ctccgcaagc actctcattt gcctcaagcc 120  
 ttggtcgatg tggtcggcga tgaatctttg agctacaagg agttttttga ggcaaccgtc 180  
 ttgctggctc agtccctcca caattgtggc tacaagatga acgacgtcgt tagtatctgt 240  
 gctgaaaaca ataccggttt cttcattcca gtcacgccc catggtatat cggtatgac 300  
 gtggctccag tcaacgagag ctacattccc gacgaactgt gtaaagtcac gggatctct 360  
 aagccacaga ttgtcttcac cactaagaat attctgaaca agtcctgga agtccaaagc 420  
 cgcaccaact ttattaagcg tatcatcatc ttggacactg tggagaatat tcacggttgc 480  
 gaatctttgc ctaatttcat ctctcgctat tcagacggca acatcgcaaa ctttaaacca 540  
 ctccacttcg accctgtgga acaagttgca gccattctgt gtagcagcgg tactactgga 600  
 ctcccaaagg gagtcagca gaccatcaa aacatttgcg tgcgtctgat ccatgctctc 660  
 gatccacgct acggcactca gctgattcct ggtgtcaccg tcttggtcta cttgcctttc 720  
 ttccatgctt tcggctttca tattactttg ggttacttta tggtcgggtc cgcgtgatt 780  
 atgttccgcc gttttgatca ggaggctttc ttgaaagcca tccaagatta tgaagtccgc 840  
 agtgtcatca acgtgcctag cgtgatcctg tttttgtcta agagcccact cgtggacaag 900  
 tacgacttgt cttactgcg tgaattgtgt tgcggtgccg ctccactggc taaggaggtc 960  
 gctgaagtgg ccgccaaacg cttgaatctt ccagggattc gttgtggctt cggcctcacc 1020  
 gaatctacca gcgctattat tcagtctctc cgcgatgagt ttaagagcgg ctctttgggc 1080  
 cgtgtcactc cactcatggc tgctaagatc gctgatcgcg aaactggtaa ggctttgggc 1140  
 ccgaaccaag tgggcgagct gtgtatcaaa ggccctatgg tgagcaaggg ttatgtcaat 1200  
 aacgttgaag ctaccaagga ggccatcgac gacgacggct ggttgcattc tggatgtttt 1260  
 ggatattacg acgaagatga gcatttttac gtcgtggatc gttacaagga gctgatcaaa 1320  
 tacaagggtg gccagggtgc tccagctgag ttggaggaga ttctgttgaa aaatccatgc 1380  
 attcgcgatg tcgctgtggt cggcattcct gatctggagg ccggcgaact gccttctgct 1440  
 ttcgttgtca agcagcctgg taaagaaatt accgccaag aagtgtatga ttacctggct 1500  
 gaacgtgtga gccatactaa gtacttgctg ggcggcgtgc gttttgttga ctccatccct 1560  
 cgtaacgtaa caggcaaaat taccgcgaag gagctgttga aacaattgtt ggagaaggcc 1620  
 ggcggt 1626

<210> 300  
 <211> 542  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 300  
 Met Val Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His  
 1 5 10 15  
 Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg  
 20 25 30  
 Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu  
 35 40 45

004280-082400

Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
50						55					60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115					120					125			
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
		130				135					140				
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170					175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185					190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200					205			
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr
		210				215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235					240
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
				245					250					255	
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
			260					265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275					280					285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
		290				295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315					320
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
				325				330						335	
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Ser	Leu	Arg	Asp
			340					345					350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360					365			
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
		370				375					380				
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn
385					390					395					400
Asn	Val	Glu	Ala	Thr	Lys	Glu	Ala	Ile	Asp	Asp	Asp	Gly	Trp	Leu	His
				405					410					415	
Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val
				420				425					430		
Asp	Arg	Tyr	Lys	Glu	Leu	Ile	Lys	Tyr	Lys	Gly	Ser	Gln	Val	Ala	Pro
		435					440					445			
Ala	Glu	Leu	Glu	Glu	Ile	Leu	Leu	Lys	Asn	Pro	Cys	Ile	Arg	Asp	Val
		450				455					460				
Ala	Val	Val	Gly	Ile	Pro	Asp	Leu	Glu	Ala	Gly	Glu	Leu	Pro	Ser	Ala
465					470					475					480
Phe	Val	Val	Lys	Gln	Pro	Gly	Lys	Glu	Ile	Thr	Ala	Lys	Glu	Val	Tyr
				485				490						495	
Asp	Tyr	Leu	Ala	Glu	Arg	Val	Ser	His	Thr	Lys	Tyr	Leu	Arg	Gly	Gly
		500						505					510		

Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr  
 515 520 525  
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly  
 530 535 540

<210> 301  
 <211> 1626  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 301  
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 ttggctcgatg ttggctggcga tgaatctttg agctacaagg agttttttga ggcaaccgctc 180  
 ttgctggctc agtccctcca caattgtggc tacaagatga acgacgtcgt tagtatctgt 240  
 gctgaaaaca ataccggttt cttcattcca gtcacgccc catggtatat cggtatgatc 300  
 gtggctccag tcaacgagag ctacattccc gacgaactgt gtaaagtcac gggatatctc 360  
 aagccacaga ttgtcttcac cactaagaat attctgaaca aagtcctgga agtccaaagc 420  
 cgcaccaact ttattaagcg tatcatcatc ttggacactg tggagaatat tcacggttgc 480  
 gaatctttgc ctaatttcat ctctcgctat tcagacggca acatcgcaaa ctttaaacca 540  
 ctccacttcg accctgtgga acaagttgca gccattctgt gtagcagcgg tactactgga 600  
 ctcccaaagg gagtcatgca gacctatcaa aacatttgcg tgcgtctgat ccatgctctc 660  
 gatccacgct acggcactca gctgattcct ggtgtcaccg tcttgggtcta cttgcctttc 720  
 ttccatgctt tcggctttca tattactttg ggttacttta tggctcgtct ccgcgtgatt 780  
 atgttcgcgc gttttgatca ggaggctttc ttgaaagcca tccaagatta tgaagtccgc 840  
 agtgtcatca acgtgcctag cgtgacctg tttttgtcta agagcccact cgtggacaag 900  
 tacgacttgt cttcactgcg tgaattgtgt tgcggtgccg ctccactggc taaggaggtc 960  
 gctgaagtgg ccgccaacg cttgaatctt ccagggattc gttgtggctt cggcctcacc 1020  
 gaatctacca gtgcgattat ccagactctc ggggatgagt ttaagagcgg ctctttgggc 1080  
 cgtgtcactc cactcatggc tgctaagatc gctgatcgcg aaactggtaa ggctttgggc 1140  
 ccgaaccaag tgggcgagct gtgtatcaaa ggccctatgg tgagcaaggg ttatgtcaat 1200  
 aacgttgaag ctaccaagga ggccatcgac gacgacggct gggtgcattc tggtgatttt 1260  
 ggatattacg acgaagatga gcattttttac gtcgtggatc gttacaagga gctgatcaaa 1320  
 tacaagggta gccaggttgc tccagctgag ttggaggaga ttctgttgaa aaatccatgc 1380  
 attcgcgatg tcgctgtggt cggcattcct gatctggagg ccggcgaact gccttctgct 1440  
 ttcgttgtca agcagcctgg tacagaaatt accgccaag aagtgtatga ttacctggct 1500  
 gaacgtgtga gccatactaa gtacttgctg ggcggcgtgc gttttgttga ctccatccct 1560  
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 ggcggt 1626

<210> 302  
 <211> 542  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Sequence of a synthetic luciferase

<400> 302  
 Met Val Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His  
 1 5 10 15  
 Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg  
 20 25 30  
 Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu  
 35 40 45

Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
50						55					60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115						120				125			
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
	130					135					140				
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170					175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185					190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200					205			
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr
	210					215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235					240
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
			245						250					255	
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
		260						265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275					280					285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
	290					295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315					320
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
			325						330					335	
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Thr	Leu	Gly	Asp
		340						345					350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360					365			
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
	370					375					380				
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn
385					390					395					400
Asn	Val	Glu	Ala	Thr	Lys	Glu	Ala	Ile	Asp	Asp	Asp	Gly	Trp	Leu	His
			405						410					415	
Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val
		420						425					430		
Asp	Arg	Tyr	Lys	Glu	Leu	Ile	Lys	Tyr	Lys	Gly	Ser	Gln	Val	Ala	Pro
		435					440					445			
Ala	Glu	Leu	Glu	Glu	Ile	Leu	Leu	Lys	Asn	Pro	Cys	Ile	Arg	Asp	Val
	450					455					460				
Ala	Val	Val	Gly	Ile	Pro	Asp	Leu	Glu	Ala	Gly	Glu	Leu	Pro	Ser	Ala
465					470					475					480
Phe	Val	Val	Lys	Gln	Pro	Gly	Thr	Glu	Ile	Thr	Ala	Lys	Glu	Val	Tyr
			485						490					495	
Asp	Tyr	Leu	Ala	Glu	Arg	Val	Ser	His	Thr	Lys	Tyr	Leu	Arg	Gly	Gly
		500						505					510		

Val	Arg	Phe	Val	Asp	Ser	Ile	Pro	Arg	Asn	Val	Thr	Gly	Lys	Ile	Thr
		515					520					525			
Arg	Lys	Glu	Leu	Leu	Lys	Gln	Leu	Leu	Val	Lys	Ala	Gly	Gly		
	530					535						540			

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